# TAXONOMIC NOTES AND NEW SECTIONS OF *CLITORIA* SUBGENUS *BRACTEARIA* (LEGUMINOSAE)[1]

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Botanists have traditionally followed Bentham (1858) recognizing three natural groups in the genus *Clitoria*, treating them as sections, and ignoring Baker (1879) who elevated two of them to the level of subgenus. Species with woody habits (i.e. trees, tall shrubs, and woody vines) are usually included in section *Clitorianthes* Bentham. The name *Clitorianthes* is a superfluous name for *Bractearia* Martius ex Bentham (1837). In recent monographic studies of *Clitoria*, Fantz (1977) concluded that these three natural groups, on the basis of morphological and distributional data, supported by the scant cytological and developmental data available, should be treated at the subgeneric level. The subgenus of woody members contains half of the 58 species in *Clitoria*, a number of which are endemic to certain refugia recognized by Prance (1973) and as yet undescribed. The 29 species of this subgenus can be segregated into four sections. This paper provides taxonomic notes on subgenus *Bractearia* and describes the new sections and two new species.

In his revisionary treatment of *Clitoria*, Bentham (1837) recognized three sections. Section *Bractearia* Mart. was described for the first time by fruticose habit, trifoliolate leaves and bracteoles equal to or longer than the calyx. Bentham included five species in this section: *C. amazonum* Mart. ex Benth., *C. acuminata* Benth., *C. racemosa* Benth., *C. poitaei* DC., and *C. arborea* Benth.

In an article on plants collected by Schomburgk in British Guiana, Bentham (1839) substituted the name *Dendrocyamus* for *Bractearia* justifying the change by the fact that *Bractearia* was used as a generic epithet in the Rubiaceae and as a sectional epithet in the genus *Chaetogastra* (Melastomataceae).

Although Bentham (1858) continued to recognize three sections in *Clitoria*, he again substituted a new name for the woody section, now calling it *Clitorianthes*. No comment was made on the changed named, nor was reference made to any pre-existing names for this section. Bentham here changed the sectional diagnosis of section *Clitorianthes* to erect shrubs or

[1] Taxonomic studies on *Clitoria* accomplished at the IFAS Herbarium, Dept. of Botany, University of Florida, Gainesville, Florida. Florida Agricultural Experiment Station Journal Series No. 1344.

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tall climbers with three leaflets and a flat or slightly convex, coriaceous legume. He further divided the nine species in section *Clitorianthes* into two unnamed groups distinguished by the bracteoles. The first group included six species with bracteoles narrow or much shorter than the calyx. Of the six species included, only *Clitoria arborescens* (synonym: *C. poitaei* DC.) had figured in his original list of 1837. The second group was characterized by ovate coriaceous bracteoles subequal to the calyx. All three species now placed in this group had been assigned to this section in 1837. Their names now were reported as *C. amazonum* Mart.. ex Benth. (synonym: *C. acuminata* Benth.), *C. hoffmannseggii* (a superfluous name for *C. arborea* Benth.) and *C. racemosa* Benth.

Publications of the next century which included *Clitoria* were primarily of a floristic nature. Authors adopted Bentham's treatment and used the name *Clitorianthes* for the section which included the woody species. Baker (1879), in a floristic treatment of legumes in India, elevated two of Bentham's sectional names to the level of subgenus. Section *Clitorianthes* Benth. was not included in this revisionary change, presumably because none of its species occur in India. No other floristic work on *Clitoria* has recognized Baker's treatment of subgenera, the genus always being divided into sections following Bentham's treatment of 1858.

In the first monographic treatment of the genus in the past century, Fantz (1977) concluded that the three natural groups can be distinguished morphologically by the fruits and seeds, supported by differences in the leaves, calices, androecia, and gynoecia. Distributional patterns, presence or absence of cleistogamy, and the limited cytological and developmental data available all support the recognition of these three groups as separate entities, and at the level of subgenus in agreement with Baker. Section *Clitorianthes* Benth. is thus elevated to the level of subgenus and *Bractearia* is adopted as the oldest and only legitimate name published for this woody group. Bentham's diagnosis of the woody group is modified to include additional characteristics which distinguishes it from the other two subgenera.

CLITORIA L. subgenus **Bractearia** (Mart. ex. Benth.) Fantz, stat. nov.

*Clitoria* L. sect. *Bractearia* Mart. ex Benth., Ann. Wien. Mus. Natur. 2: 115. 1837.

Trees, tall erect shrubs or treelets, and lianas. Leaves 3-foliolate, long-stalked (petiole 4–16 cm), large (leaflets commonly 8–28 cm long x 3–23 cm wide); petiolules elongate (4–10 cm long). Inflorescence woody, paniculate, subpaniculate or racemose-nodose; usually several- to many-flowered, the flowers all chasmogamous. Calyx subcoriaceous, multi-nerved, persistent in fruit. Ovary elongate (1–2 cm). Staminal tube elongate (2.5–4 cm). Fruits flat or occasionally weakly convex around the seeds and depressed between them, ecostate, long-stipitate (stipe 12–33 mm), coriaceous, 6–25 cm long x 1–4 cm wide. Seeds smooth, compressed, orbicular or nearly so, 7–16 mm in diameter; germination epigeal.

LECTOTYPIC SPECIES: *C. amazonum* Mart. ex Benth. (LECTOTYPE: Brazil, Para, ad fluv. Amazonum prope Ponte de Mattary, Sep, *Martius 2740*, M).

Bentham (1837) placed five species in section *Bractearia* when he first described the group. Of these, *C. amazonum* is designated as the lectotype because it was from the type collection that Bentham obtained the name *Bractearia* Mart. At Munich, six sheets of the type collection (M 12408–12413) are contained in one folder, sheet M 12408 bearing the identification *Bractearia amazonica* Mart. and annotated *Clitoria amazonica* by Bentham.

## KEY TO THE SECTIONS OF SUBGENUS BRACTEARIA

1. Bracteoles 6–16 mm wide, coriaccous, 10–40 mm long and subequal to the calyx (it often hidden from view), rarely shorter; inflorescence terminal or axillary (appearing with the leaves), paniculate to subpaniculate, the primary lateral branches which bear the pedicels either short (1–5 mm long) or elongate (to 30 mm long).
   2. Calyx strigulose with scattered, short appressed trichomes, to glabrate, or rarely pilose, its surface easily seen; inflorescence straight to slightly curved, paniculate to subpaniculate, internodal segments ascending in a nearly straight line (non flexuous); trees or occasionally tall erect shrubs, rarely with a climbing apex. . . . . 1. *Bractearia*
   2. Calyx velutinous with short, appressed, more or less silky trichomes, its surface hidden; inflorescence flexuous, at least toward the apex, racemose-nodose, internodal segments weakly to strongly bent in the opposite direction; lianas, occasionally erect shrubs or treelets. . . . . 2. *Flexuosae*
1. Bracteoles 1–4, rarely 6 mm wide, subcoriaccous, usually 2–12 mm long and shorter than the calyx, or rarely elongate and subequal to the calyx, but then always narrow (calyx conspicuous); inflorescence axillary, and then often appearing before the leaves and/or cauliflorous, racemose, the primary lateral branches bearing the pedicels lacking or represented by a conspicuous knob to 1 mm long (=nodose).
   3. Calyx tube 6–13 mm long with minute lobes 1–3 (–5) mm long; legume slightly convexed around the seeds and conspicuously depressed between them at maturity; trees or tall shrub-treelets, rarely lianas. . . . . 3. *Brachycalyx*
   3. Calyx tube 10–30 mm long with conspicuous lobes 4–18 mm long; legume flat, sometimes raised around the seeds but not depressed between them; lianas or rarely shrubs-treelets . . . . . 4. *Cauliflorae*

### 1. CLITORIA L. subgenus BRACTEARIA (Mart. ex Benth.) Fantz sect. BRACTEARIA

*Clitoria* L. sect. *Bractearia* Mart. ex Benth., Ann. Wien. Mus. Natur. 2: 115. 1837.
*Clitoria* L. sect. *Dendrocyamus* Benth., Ann. Ant. Hist. 3: 44. 1839; *nom. superfl.*
*Clitoria* L. sect. *Clitorianthes* Benth., Journ. Linn. Soc. 2: 41. 1858; *nom. superfl.*

*Arbores vel interdum frutices alti.* Inflorescentiae paniculatae vel subpaniculatae, lignosae; *rami laterales primarii pedicellifer (1) 4–30 mm longi*; axes centralis non flexuosus. Calyx pubescentia dispersa vel plerumque glabratus, trichomatibus brevibus, appressis, infrequenter pilosibus. *Bracteolae coriaceae, calycem subaequantes et plerumque occultantes*, 6–16 mm latae et (11–) 14–28 mm longae. *Legumen planum*, coriaccum vel sublignosum, *typice latum, (1.5–) 2–4 cm latum, suturis incrassatis*; pubescentia glabrata plerumque vel trichomatibus microscopicis uncinatis, magnitrichomatibus ribi repertis secus suturas.

Members of section *Bractearia* are commonly collected in forests along the Amazon River and its major tributaries. The section includes seven species (Fantz, 1977): *C. arborea* Hoffm. ex Benth.; *C. amazonum* Mart. ex Benth., *C. fairchildiana* Howard, *C. nervosa* Herz., and three to be described in a succeeding article.

2. CLITORIA L. subgenus BRACTEARIA (Mart. ex Benth.) Fantz sect. **Flexuosae** Fantz, sec. nov.

*Frutices lignosi saepius volubiles raro arbores. Inflorescentia debilis vel valde flexuosa prope apicem, segmentis internodiorum abruptly flexuosis*, subpanicula; ramis laterales primarii pedicelliferi inconspicuis, subsessilibus ad 6 mm longae. *Calyx pubescentia conferta*, trichomatibus brevibus, appressis, *aliquanto sericeis. Bracteolae coriaceae, calycem subaequantes vel calyce paulo breviores vel raro calyce multo breviores, semper latae factae, (6–) 9–15 mm latae*, 10–40 mm longae. Flores grandes 6–8 (–9.5) cm. *Tubes stamineus elongatus*, 3.5–5 cm longus; antheris grandibus, 2–3 mm longis. *Legumen longistipitatum* (stipes 2.5–4 cm), *planum*, coriaceum, 1.5–2.5 cm latum, pubescentia appressa. Semina brunnea, incrassata, longitudine latitudine longiore.

HOLOTYPIC SPECIES: *C. flexuosa* Fantz[2] (HOLOTYPE: Peru, Tarapoto, Feb. 1856, *Spruce 4527*, K-Hb. Bentham).

Members of section *Flexuosa* have been collected from forest refugia in Peru and Eucador. The section includes three species (Fantz, 1977): *C. flexuosa* Fantz, *C. pozuzoensis* Macbride, and one to be described.

3. CLITORIA L. subgenus BRACTEARIA (Mart. ex Benth.) Fantz sect. **Brachycalyx** Fantz, sect. nov.

*Arbores vel frutices alti*, raro frutex lignosus saepius volubilis. *Folia decidua, typice tempore florendi, superne puberula*, rarius glabra. Stipulae deciduae vel caducae, lanceolatae, acutae, angustae, 1–2 mm latae. Inflorescentia nodoso-racemosa, axillaris, plerumque primum ad nodos denudato visa praecox. *Calycis tubus brevis, interdum cupulatis (campanulato-tubularis)*, 7–15 mm longus, *lobis late deltoideis minutis vel fere absentibus, 1–4 mm longis*, 3–4 mm latis, latitudo longitudinem subaequalante vel latiore quam longiore. *Bracteolae minutae*, 2–5 mm longae, 1.5–3 mm latae. *Legumen* pubescens, *leniter vel valde depressum inter semina tempore liberationis. Semina* suborbiculata vel leviter longiora quam latiora, compressa, vulgo 7–13 mm diametro, *2–3 mm incrassata.*

HOLOTYPIC SPECIES: *C. brachycalyx* Harms (TYPE: Brazil, Rio Branco, Surumu, camp de Serra de Mairary, Feb 1909, *Ule 8398*, B destroyed during war, photo at MO 1675333; Isotype at K).

Members of section *Brachycalyx* are collected from dry tropical forests or occasionally from open grassy areas of savannas at altitudes up to 900 m,

[2] CLITORIA **flexuosa** Fantz, sp. nov. A *Clitoria pozuzoensis* Macbride affinis a qua bracteolis et bracteis longioribus, fructibus longo-stipitatis, tubo staminale breviore, petalis brevi-unguiculatis, et foliis plerumque infra subpilosis distinguitur. HOLOTYPE: Peru, Tarapoto. Frutex volubili robustus, flores rosei, Feb 1856, *Spruce 4527* (K-Hb. Bentham). ISOTYPES: K-Hb. Hooker, W 18669. PARATYPES: Tarapoto, *Spruce s.n.* (K); Peru, San Martin, Juan Jui, Alto Río Huallaga, ca. 400 m, Sep 1934, *Klug 3820* (BM,F 766344,GH, MO 1105520 & 1105521).

in northwestern South America and adjacent Panama. Isolated collections of one species have been made as far north as Chiapas, Mexico. The section includes seven species (Fantz, 1977): *C. brachycalyx* Harms, *C. brachystegia* Benth., *C. dendrina* Pittier, *C. glaberrima* Pittier, and three to be described.

4. CLITORIA L. subgenus BRACTEARIA (Mart. ex Benth.) Fantz sect. **Cauliflorae** Fantz, sect. nov.

*Frutices lignosi saepius volubilis vel infrequenter frutices erecti. Inflorescentia vulgo cauliflora et axillaris,* racemosa, plus minusve nodosa. *Bracteolae* amplitudine variae, sed non grandae et calycem occultantes, *typice calycis tubo breviores et angustae,* 1–3 (raro –6) mm latae. *Calycis tubus lobos conspicuos ferens,* typice 4–13 (–27) mm longos. Legumen planum vel leniter depressum inter semina, pubescentia typice microuncinata cum macrotrichomatibus dispersis, effusis vel suberectis, interdum confertis cum trichomatibus uncinatis nullis. *Semina* vulgo suborbiculata, raro oblonga, 3–5 *mm incrassata,* interdum compressa.

HOLOTYPIC SPECIES: *C. sagotii* Fantz[3] (HOLOTYPE: French Guiana, Karouany, 1857, *Sagot 120,* K-Hb. Bentham).

Members of section *Cauliflorae* are found mostly in northern South America, one extending into Central America. The section includes twelve species (Fantz, 1977): *C. arborescens* R. Brown in Ait., *C. coriacea* Schery, *C. javitensis* (H.B.K.) Benth., *C. leptostachya* Benth., *C. obidensis* Huber, *C. sagotii* Fantz, *C. selloi* Benth., and five to be described.

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[3] CLITORIA **sagotii** Fantz, sp. nov. A *Clitoria javitensis* (H.B.K.) Benth. affinis a qua calycis, leguminis, et ovarii trichomatibus prominentibus uncinatis pagina supra folii medionervum elevatum ferenti, inflorescentia subsessile, vexillo brevi-unguiculato, stylo ovario multo longiore et fructibus parvioribus, semina incrassatis distinguitur. HOLOTYPE: Fr. Guiana, Karouany, 1857, *Sagot 120* (K-Hb. Bentham, photo at S). ISOTYPES: GH,NY,S,U 37632A,W.